CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER No. 92-078
WASTE DISCHARGE REQUIREMENTS

TOSCO REFINING COMPANY AND TOSCO CORPORATION
AVON REFINERY
CONTRA COSTA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, hereinafter called the Board, finds that:

Facility Description

1. Tosco Refining Company, a division of Tosco Corporation, (hereinafter called the discharger) owns and operates the Avon Refinery (hereinafter called the facility) with an approximate daily throughput capacity of 145,000 barrels of petroleum crude oil and produces primarily gasoline and diesel fuels. Other products are liquid petroleum gas, heating oil, jet fuel and petroleum coke. The facility has been operating since 1913 and has been owned by the discharger since 1976. Phillips Petroleum, Tidewater Oil, Pacific Oil, and Associated Oil Companies were the previous owners of this facility.

2. This 2,100-acre facility is about 3 miles east of the City of Martinez (Attachment 1) on the southern shore of Suisun Bay in Contra Costa County. The facility is bounded on the west by the Pacheco Creek and Walnut Creek, on the north by wetlands and Suisun Bay, on the south by Highway 4, and on the east by Memory Gardens cemetery, Mallard Reservoir, Hasting Slough and wetlands.

3. The Concord fault is an active fault which runs through the western side of this facility. Special studies along the Concord fault delineated a zone of concern which encompasses a portion of this facility.

4. A portion of the facility was built on marshlands or wetlands. Fill is the first subsurface material encountered in much of the flat portions of the facility. The second subsurface material generally encountered is Bay Mud. Interbedded with the Bay Mud are the Bay Peat, and sandy units. The Bay Peat is composed primarily of black or brown organic matter derived from vegetation deposited in marshes. The Bay Mud ranges in thickness from zero to forty feet throughout the region.

5. There are four drinking water wells approximately 3,000 feet from Mallard Reservoir, which is located southeast of the facility. Groundwater in other parts of the facility is also a potential drinking water source. Total dissolved solids in the shallow groundwater, within the major northern portion of the facility closer to the Bay exceeds 3,000 mg/l, and thus does not meet the State Board definition of potential drinking water source. Groundwater and surface water from the facility

will impact nearby wetlands and Suisun Bay.

Related Orders

6. On June 20, 1990, the Board adopted Waste Discharge Requirements Order No. 90-083, which established: a task and time schedule to document the current hydrogeological conditions of the closed oily waste impoundments (OWIs); effectiveness of the OWIs' groundwater monitoring system; a technical report proposing improvements to the ground water monitoring wells for 12 waste management units and 2 storm-water collection reservoirs; and, a technical report proposing adequate soil borings for further characterization of waste management units. The U.S. EPA also issued an order under Section 3008(h) of RCRA requiring further investigation of the waste management units and the proposal of corrective actions. The discharger submitted the November 1, 1990 "Waste Management Units Investigation Work Plan", the June 14, 1991 "OWI Final Report - Site Characterization of Oily Waste Impoundments", and the February 27, 1992 "Quarterly Status Report - RCRA Facility Investigation". Soil borings were drilled and sampled at 28 locations, and 26 of them were converted to groundwater monitoring wells. One hundred and twenty-two soil samples and 10 pore water samples were analyzed for site constituents such as arsenic, chromium, lead, nickel, zinc, selenium, antimony, benzene, toluene, xylene, ethel benzene, and total petroleum hydrocarbons. A draft investigation report is scheduled to be submitted in November 1992.

7. On June 20, 1990, the Board adopted Site Cleanup Requirements Order No. 90-088, which required the discharger to cleanup underground free phase liquid petroleum hydrocarbons (FPLH). There are various methods of estimating the amount of FPLH present. One estimate of the amount present has been as high as 23 million gallons, but the actual amount may be less.

8. The Board also adopted Waste Discharge Requirements Order No. 88-053, a National Pollutant Discharge Elimination System Permit No. CA0004961 on April 20, 1988 and amended it on June 15, 1988, and December 12, 1990 to regulate the discharge of treated wastewater to Suisun Bay.

Reference to Regulations and Standards

9. References to Chapter 15 are to Chapter 15, Division 3, Title 23 of the California Code of Regulations. The maximum contaminant level (MCL) referenced in this Order are for drinking water.

Report of Waste Discharge

10. The discharger submitted a January 1988 "Report of Waste Discharge", and a Solid Waste Assessment Test (SWAT) report dated June 30, 1989 and its January 12, 1990 addendum. These reports did not satisfactorily characterize the waste.

Waste Management Units

11. The discharger and /or previous owners of the facility have utilized a number of on-site waste management units for the treatment, storage, or disposal of wastes from the refinery (Attachment 2). This Order addresses 14 units. Most of the units ceased accepting waste prior to the discharger's acquisition of the facility in 1976. None of these units comply with the construction standards of Chapter 15. Some of the units may contain hazardous waste. In each unit described below, corrective actions must be performed to bring the unit into compliance with Chapter 15 requirements.

a. WMU-1 (EPA No. 4.17) TEL Weathering Area is an inactive, 0.34 acre landfill, with a period of disposal of 1947-1971. This area reportedly contains tetraethyl lead sludge from leaded tank bottoms and oil soaked wood. The concentration of Lead in the soil samples taken from this unit exceeded the background. Recently, the discharger installed one monitoring well for this unit.

b. WMU-2 (EPA No. 4.18) Arsenic Trioxide Landfill is an inactive, 100 square feet landfill, with a disposal date of 1973. Approximately 4 to 10 drums of arsenic trioxide were disposed in this area, either in drums or dumped directly into the ground. The discharger is in a process of a geophysical investigation to locate any buried drums.
Groundwater Contamination Ground water monitoring well in the vicinity of this unit has Lead contaminant concentrations as high as 120 ug/l (1987) which exceeded California primary MCL of 50 ug/l.

c. WMU-3 (EPA No. 4.19) Waste Burial Area is an inactive, 1080 square feet, landfill, with a period of disposal of 1947-1965. This area consists of more than 29 burial pits, containing 309 cubic yard of gasoline tank bottom sludge, including TEL sludge, arsenic waste and aluminum chloride. Total lead was reported in soil samples as high as 12,400 mg/kg, which exceeded the state regulatory, Title 22 hazardous concentration total threshold limit concentration (TTLC) value of 1000 mg/Kg for hazardous waste.

d. WMU-4 (EPA No. 4.20) is an inactive, 0.32 acre landfill, with a period of disposal of 1950-1958. This area contains 80 cubic yards of residue from handling caustic cleaning solution, tetraethyl lead sludge, oily Coke, kerosene residues, and catalytic reformer bottoms.

e. WMU-5 (EPA No. 4.21) is an inactive, 5.29 acre landfill, with a period of disposal of 1950-1979. This area was used for disposal of about 40,000 cubic yard of spent catalysts, tetraethyl lead sludge, and petroleum coke. The discharger is in a process of a geophysical investigation to locate any possible buried drums.
Groundwater Contamination Ground water monitoring wells around this unit have contaminant concentrations as high as:
   i. Arsenic 550 ug/l which exceeded California primary MCL of 50 ug/l;
   ii. Chromium 60 ug/l which exceeded California primary MCL of 50 ug/l;
   iii. Lead 150 ug/l which exceeded California primary MCL of 50 ug/l;

and,

iv. Benzene 2 ug/l which exceeded California primary MCL of 1 ug/l.

f. WMU-6 (EPA No. 4.22) Old Oily Sewer Out-fall is an inactive, 2.57 acre unit, with an unknown period of disposal ending in 1961. This unit was the location of the refinery oily sewer out-fall and received refinery oily waste. It is reported that the oily material was excavated and moved to WMU-8 during construction of the Iso-cracker Unit in 1961. However the November 1991 investigation found soil contamination at this unit. A soil concentration of zinc at 6,730 mg/Kg was reported in Boring CHB3; which exceeded the total threshold limit concentration (TTLC) of 5,000 mg/Kg for hazardous waste.

Groundwater Contamination Ground water monitoring wells around this unit have contaminant concentrations as high as:

i. Arsenic 428 ug/l which exceeded California primary MCL of 50 ug/l;
ii. Chromium 7,800 ug/l which exceeded California primary MCL of 50 ug/l; and,
iii. Benzene 600 ug/l which exceeded California primary MCL of 1 ug/l.

g. WMU-8 (EPA No. 4.23) is an inactive, 1.38 acre landfill, with a period of disposal of 1913-1961. This unit reportedly received catalyst fines, oily waste from the excavation of WMU-6 in 1961, and litharge (a lead-based compound).

Groundwater Contamination Ground water monitoring wells around this unit have contaminant concentrations as high as:

i. Arsenic 380 ug/l which exceeded California primary MCL of 50 ug/l; and,
ii. Lead 120 ug/l which exceeded California primary MCL of 50 ug/l.

h. WMU-9 (EPA No. 4.24) SbCl Landfill is an inactive, 87 square feet landfill, with a period of disposal of 1943-1955. This area contains 33 cubic yard of antimony trichloride catalyst. The discharger is investigating the exact location of this unit.

Groundwater Contamination Ground water monitoring wells around this unit have arsenic contaminant concentrations as high as 110 ug/l which exceeded California primary MCL of 50 ug/l.

i. WMU-10 (EPA No. 4.25) Land Farm is an inactive, 6.57 acre Land-farm, with a period of disposal of 1966-1976. This land treatment area contains 10,600 cubic yard of oily wastes and material from an oil recovery centrifuge. This unit is located in the 100-year flood plain, and is protected from flooding by the dikes constructed around the perimeter. However, an aerial photo taken probably during wet season shows that part of this unit retains rain water. The total and soluble lead contamination of soil at this unit, reported in June 30, 1989 Solid Waste Assessment Test Report, are as high as 2490 mg/Kg and 120 mg/l respectively which exceeded the state regulatory, Title 22 hazardous concentration total threshold limit concentration (TTLC) of 1,000 mg/Kg and soluble threshold limit

in December 29, 1982 "Soil and Ground-Water Investigation Avon Refinery" Report, are as high as 5,800 mg/Kg of lead which exceeded the state regulatory, Title 22 hazardous concentration total threshold limit concentration (TTLC) of 1,000 mg/Kg. The discharger is investigating the source, rate and extent of contamination around monitoring well No. MK-40K.

Groundwater Contamination Ground water monitoring wells around this unit have contaminant concentrations as high as:

i. Arsenic 2,900 ug/l which exceeded California primary MCL of 50 ug/l;
ii. Chromium 465 ug/l which exceeded California primary MCL of 50 ug/l;
iii. Lead 170 ug/l which exceeded California primary MCL of 50 ug/l; and,
iv. Benzene 3 ug/l which exceeded California primary MCL of 1 ug/l.

m. WMU-31 (EPA No. 4.29) North Landfill is an inactive landfill, with a period of disposal of 1913 to Mid. 1970s. The maximum depth investigated at this unit is 2.5 feet. This unit is underlain by oily sludge. The result of the laboratory analysis show that lead was detected in all samples of the black sludge at concentrations ranging from 1,280 to 4,090 mg/Kg. All lead values exceeded the Title 22, TTLC regulatory value of 1,000 mg/Kg for hazardous waste. The discharger is in the process of further characterization of this unit.

Groundwater Contamination Ground water monitoring wells around this unit have contaminant concentrations as high as:

i. Arsenic 67 ug/l which exceeded California primary MCL of 50 ug/l;
ii. Chromium 52 ug/l which exceeded California primary MCL of 50 ug/l; and,
iii. Lead 70 ug/l which exceeded California primary MCL of 50 ug/l.

n. WMU-32 (EPA No. 4.16) Drum Cleaning Area is an inactive, 4.3 acre unit, with a period of disposal of 1913-1976. This unit is a landfill which received oily wastes, sludge and caustics. The soil contamination at this unit, reported in June 30, 1989 Solid Waste Assessment Test Report, is as high as 6.3 mg/l of soluble lead which exceeded the state regulatory, Title 22 hazardous concentration soluble threshold limit concentration (STLC) of 5 mg/l.

Groundwater Contamination Ground water monitoring wells around this unit have contaminant concentrations as high as:

i. Arsenic 3,000 ug/l which exceeded California primary MCL of 50 ug/l;
ii. Chromium 4,400 ug/l which exceeded California primary MCL of 50 ug/l;
iii. Zinc 10,100 ug/l which exceeded California secondary MCL of 5,000 ug/l; and,
iv. Benzene 740 ug/l which exceeded California primary MCL of 1 ug/l.

Basin Plan

12. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Region (Basin Plan) on December 17, 1986 and amended it on August 19, 1987, July 18, 1989, and December 11, 1991. The State Water Resources Control Board adopted State-wide plans for Enclosed Bays and Estuaries and Inland Surface Waters on April 11, 1991. The State plans contain water objectives for Suisun Bay. This Order implements the water quality objectives for Suisun Bay as stated in the Basin Plan.

13. The existing and potential beneficial uses of the ground water in the area are:

    a. Drinking water;
    b. Municipal Supply;
    c. Industrial Process and Service Supply; and,
    d. Agricultural Supply.

14. The existing and potential beneficial uses of the Suisun Bay are:

    a. Industrial Process and Service Supply;
    b. Navigation;
    c. Water Contact Recreation;
    d. Non-Contact Recreation;
    e. Ocean Commercial and Sport Fishing;
    f. Wildlife Habitat;
    g. Preservation of Rare and Endangered Species;
    h. Fish Migration and Spawning; and,
    i. Estuary Habitat.

California Environmental Quality Act

15. The adoption of this Order is exempt from the provisions of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code (California Environmental Quality Act) due to categorical exemption entitled "Replacement or Reconstruction (of Existing facilities)"; Section 15302, Title 14, California Code of Regulations.

Notifications and Meeting

16. The Board has notified the discharger and interested agencies and persons of its intent to prescribe waste discharge requirements and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

17. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, that the discharger or its agents, successors or assigns, in order

to meet the provisions of Division 7 of the California Water Code, shall comply with the following:

A. Prohibitions

1. The treatment or storage of waste shall not cause pollution or nuisance as defined in Section 13050 of the California Water Code, and shall not degrade the quality of any usable water.

2. Wastes shall not be disposed of in any way where they can be carried from the disposal site and discharged into waters of the State or of the United States.

3. The discharge of wastes or hazardous materials in a manner which will degrade water quality or adversely affect the beneficial uses of the waters of the State is prohibited.

4. Further significant migration of pollutants through subsurface transport to waters of the State is prohibited.

5. Activities associated with subsurface investigation and cleanup which will cause significant adverse migration of pollutants are prohibited.

B. Specifications

1. At a minimum, the wastes shall be managed according to Chapter 15 requirements.

2. During waste disposal, handling, or treatment, no wastes shall be placed in a position where they can be carried into the waters of the State.

3. This Board considers the property owner and site operator to have continuing responsibility for correcting any problems which arise in the future as a result of this waste discharge or related operations.

C. Provisions

1. The discharger shall comply with the Prohibitions and Specifications above according to the following time schedule:

   The discharger shall submit a work plan acceptable to the Executive Officer specifying, at a minimum, the corrective actions to be taken to bring the following waste management units into compliance with Chapter 15 requirements: WMU-1; WMU-2; WMU-3; WMU-4; WMU-5; WMU-6; WMU-8; WMU-9; WMU-10; WMU-11; WMU-13; WMU-14; WMU-31; and, WMU-32.

   REPORT DUE: **No later than January 1, 1993**

2. The discharger shall maintain a copy of this order so as to be available at all times to project operating personnel.

3. Technical reports, submitted by the discharger, in compliance with the Prohibitions, Specifications, and Provisions of this Order shall be submitted to the Board on the schedule specified herein. These reports shall consist of a letter report that includes the following:

   a. A summary of work completed since submittal of the previous report and work projected to be completed by the time of the next report;

   b. Identification of any obstacles which may threaten compliance with the schedule of this Order and what actions are being taken to overcome these obstacles;

   c. In the event of non-compliance with any Prohibition, Specification or Provision of this Order, written notification which clarifies the reasons for non-compliance and proposes specific measures and a schedule to achieve compliance, this written notification shall identify work not completed that was projected for completion, and shall identify the impact of non-compliance on achieving compliance with the remaining requirements of this Order; and,

   d. In the first self-monitoring report, an evaluation of the current ground water monitoring system and a proposal for modifications as appropriate.

5. All submittal of hydrogeological plans, specifications, reports, and documents (except quarterly progress and self-monitoring reports) shall be signed by and stamped with the seal of a registered geologist, registered engineering geologist, or registered professional engineer.

6. All samples shall be analyzed by State certified laboratories or laboratories accepted by the Board using approved EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control records for Board review.

7. The discharger shall maintain in good working order, and operate as efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order.

8. Copies of all correspondence, reports, and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order, submitted by the discharger, shall also be provided to the following agencies:

   a. Contra Costa County Health Department;
   b. California Environmental Protection Agency, Department of Toxic Substances Control; and,
   c. EPA Region IX.

9. The discharger shall permit the Board or its authorized representative, in accordance with Section 13267 (c) of the California Water Code, the following:

a. Entry upon the premises in which any pollution sources exist, or may potentially exist, or in which any required records are kept, which are relevant to this Order;
b. Access to copy and records required to be kept under the terms and conditions of this Order;
c. Inspection of any monitoring equipment or methodology implemented in response to this Order; and,
d. Sampling of any ground water or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the discharger.

10. The discharger shall remove and relocate any wastes which are discharged at this site in violation of these requirements.

11. The Board considers the property owner and site owner to have a continuing responsibility for correcting any problems within their reasonable control which arise in the future as a result of this waste discharge or water applied to this property during subsequent use of the land for other purposes.

12. These requirements do not authorize the commission of any act causing injury to the property of another or of the public, do not convey any property rights, do not remove liability under federal, state or local laws, and do not authorize the discharge of waste without the appropriate federal, state or local permits, authorizations, or determinations.

13. Pursuant to, or unless otherwise stated in, the requirements of California Water Code Sections 13271 and 13272, if any hazardous substance is discharged in or on any waters of the state, or discharged or deposited, or probably will be discharged in or on any waters of the state, the discharger shall report such discharge to the following:

    a. The Office of Emergency Services at (800) 852-7550 immediately;
    b. This Regional Board at (510) 464-1255 on weekdays during office hours from 8 a.m. to 5 p.m.;
    c. A written report shall be filed with the Regional Board within a week and shall include but not limited to the information relative to the following:
        i. The nature of waste or pollutant;
        ii. The quantity involved and the duration of incident;
        iii. The cause of spill;
        iv. The estimated size of the affected area;
        v. The corrective measures that have been taken or planned, and a schedule of these measures;
        vi. The persons/agencies notified;
        vii. Number and identity of monitoring or recovery wells around the spill site; and,
        viii. A detailed map presenting the spill site, any aboveground tanks, and any existing waste management units in the vicinity of the spill area.

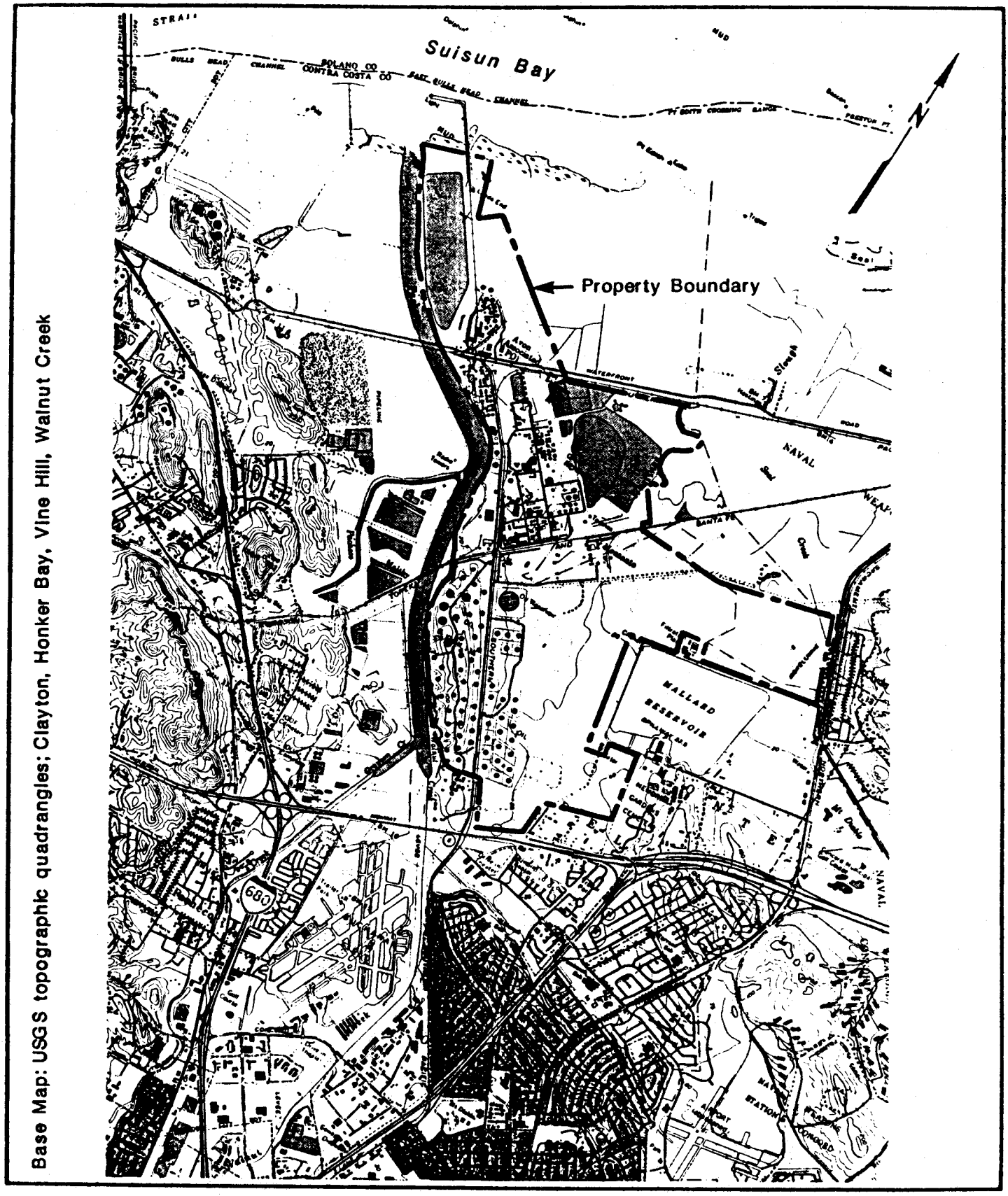
14. This Order amends the existing Waste Discharge Requirements Order No. 90-083. The Board may review the Order periodically and may revise the requirements when necessary.

15. If the discharger is delayed, interrupted or prevented from meeting one or more of the completion dates specified in this Order, the discharger shall promptly notify the Executive Officer and the Board shall consider revision of this Order.

I, Steven R. Ritchie, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region on July 15, 1992.

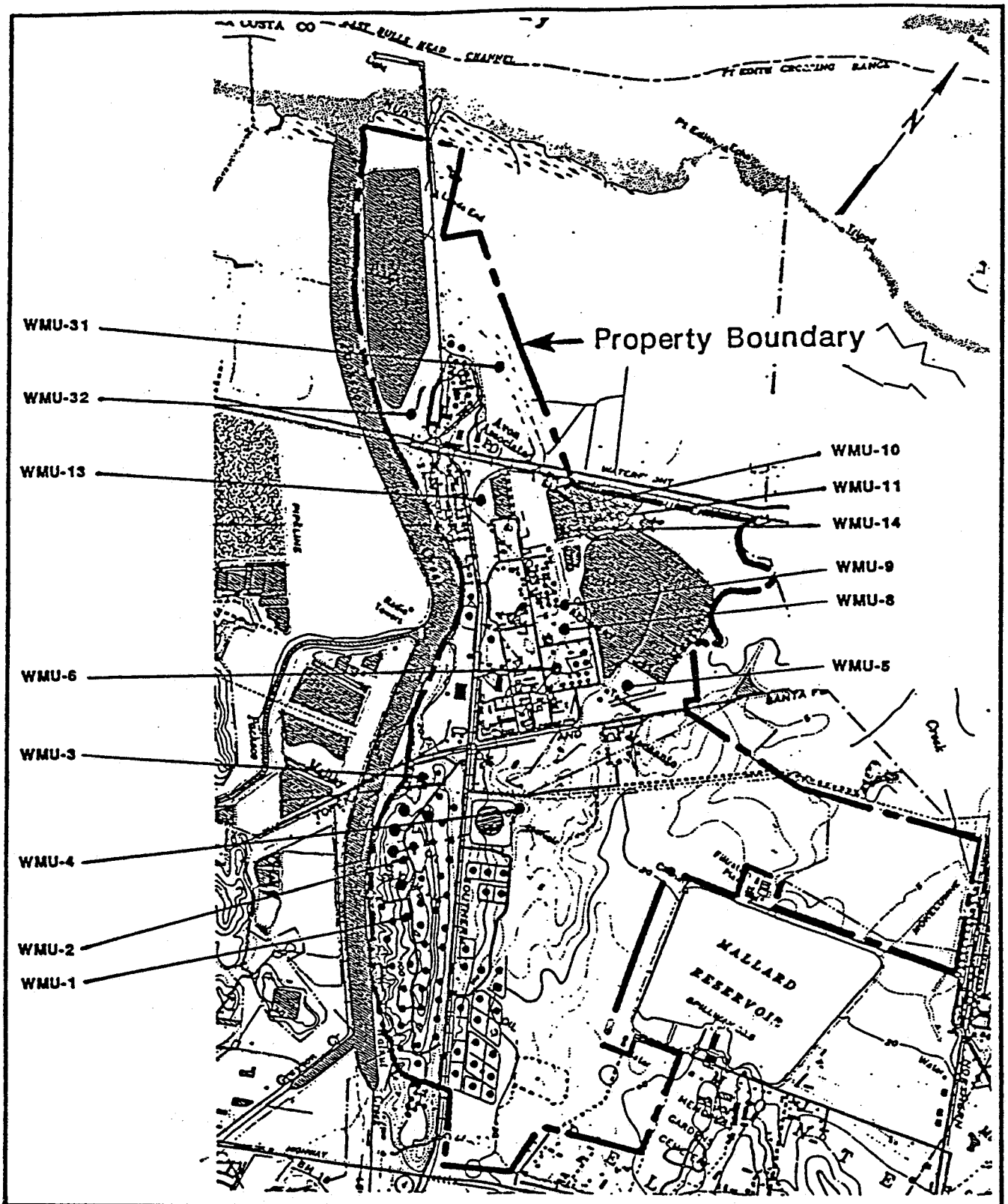
Steven R. Ritchie
Executive Officer

Attachments:
Figure 1: Location Map
Figure 2: Waste Management Units' Location Map



Facility Location Map

Figure 1: Location Map



Base Map: USGS topographic quadrangles; Clayton, Honker Bay, Vine Hill, Walnut Creek

Figure 2: Waste Management Units' Location Map